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10/674,569

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First Named Inventor

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Art Unit

1763

Examiner Name

ZERVIGON, RUDY

Attorney Docket Number

016301-045510US

ENCLOSURES (Check all that apply)

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Kent J. Tobin

Date

December 3, 2007

Reg. No.

39,496

CERTIFICATE OF TRANSMISSION/MAILING

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December 3, 2007



PATENT
Attorney Docket No.: A6378C1/T45510
AMAT No.: 006378 USA P01/DSM/PMD/JPFEIFFER
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Karthik Janakiraman et al.

Application No.: 10/674,569

Filed: September 29, 2003

For: GAS DISTRIBUTION
SHOWERHEAD

Confirmation No. 3855

Examiner: Rudy Zervigon

Technology Center/Art Unit: 1763

REPLY BRIEF

MAIL STOP APPEAL BRIEF - PATENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Examiner's Answer filed October 3, 2007 in the above-referenced case, Applicants submit this reply brief on appeal.

I. STATUS OF CLAIMS

Claim 1 was finally rejected as anticipated under 35 U.S.C. § 102(e), based upon the grounds set forth in the Office Action mailed October 4, 2006.

Claims 1 and 3-5 were finally rejected as obvious under 35 U.S.C. § 103(a), also based upon the grounds set forth in the Office Action mailed October 4, 2006.

Claims 2 and 6-18 have previously been canceled and are not at issue in this appeal.

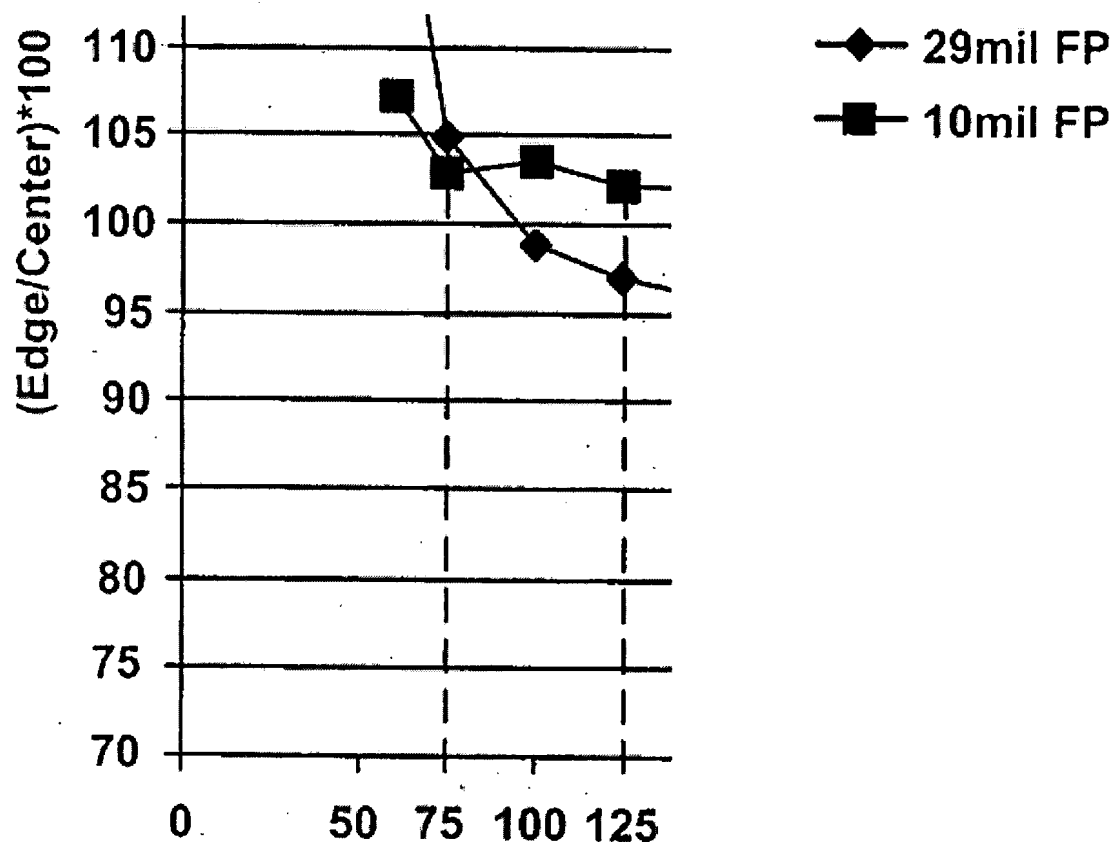
II. STATUS OF AMENDMENTS

Applicants filed a Response on July 17, 2006 in reply to the Office Action mailed April 17, 2006. A Final Office Action mailed October 4, 2006 indicated that the Response did not place the application in condition for allowance.

III. ARGUMENT

Embodiments in accordance with the present invention relate to gas distribution showerheads for use at close showerhead-to-wafer spacings.

The instant application specifically recognizes conventional showerhead designs having orifices of widths of about 0.029 inches (29 mils). However, as shown in Figure 16 (reproduced enlarged below), films formed by gas flows through the novel (■) faceplate (FP) with orifices of width of 10 mils (0.010"), exhibit dramatically superior uniformity as compared with films from a conventional (◆) faceplate (FP).



Pending independent claim 1 accordingly recites:

1. A gas distribution face plate comprising:
a face plate body having a thickness defining a number of inlet orifices
having a width of between about 0.010" and 0.018". . . (Emphasis added)

This claim stands rejected as anticipated by U.S. Patent No. 6,454,860 to Metzner et al. ("the Metzner Patent"). Nowhere, however, does the Metzner Patent teach, explicitly or even impliedly, a showerhead having orifices of the size recited by claim 1.

In the final rejection leading to this appeal, the Examiner specifically referenced col. 9, line 38 and 53-64 of the Metzner Patent as teaching the claimed orifice width. Applicants' Appeal Brief duly pointed out that these passages fail to teach orifices of the claimed width.

Now, in his Answer, the Examiner states:

[t]he Examiner erred in citing the quoted portion of the Metzner Patent supporting his anticipation conclusion. The correct portion of the Metzner Patent which anticipates Applicant's claimed dimension is at (Column 10, lines 55-56).
(EXAMINER'S ANSWER, page 7, lines 3-6)

Again however, careful review of the portion of the Metzner Patent now being relied upon by the Examiner, fails to reveal any teaching or suggestion of the claimed orifice width. Instead, col. 10, lines 55-56 of the Metzner Patent specifically teaches an orifice having the conventional width:

representative dimensions for each of a plurality of apertures **249** in a representative showerhead **240** fabricated from aluminum having a thickness of about 0.5 inches are: an inlet diameter **247** of about 0.028 inches (Emphasis added; col. 10, lines 52-56)

There is absolutely no teaching in the Metzner Patent regarding an inlet orifice having a width of the range recited by claim 1. The anticipation claim rejection is improper and should be reversed.

Claim 1 and 3-5 are also rejected as obvious in view of Japanese Patent Application No. 4[1992]-154116 to Toki et al. ("the Toki Application").

As a threshold matter, Appellant notes the following passage from the Examiner's Answer:

the Examiner submitted to the STIC a formal request for translation of the JP04154116A patent to Toki. The certified translation by the STIC, if not completed by the mailing date of this office action, will be provided to Applicant upon completion. (EXAMINER'S ANSWER, page 6, lines 5-7)

To date, Applicants have never received any certified translation of the Toki Application.

Moreover, even if such a certified translation were to be provided, Applicants are confident that that document would not support any obviousness rejection. In particular, Applicants' own translation of the Toki Application establishes that this reference lacks any explicit teaching of a showerhead having inlet orifices of the claimed size.

In response to the Examiner's contention that it would have been obvious to one of ordinary skill to optimize the dimensions and number of inlet orifices to optimize uniformity, Applicants emphasize that the Board need look no farther than the Figure 16 reproduced above.

Specifically, this Figure 16 amply demonstrates the fundamental non-linearity, and lack of predictability, between orifice size and uniformity of deposited materials at close showerhead-to-wafer spacings. Thus, rather than merely representing ordinary efforts at optimization, the claimed embodiments were developed as a result of painstaking experimentation involving a highly complex and unpredictable chemical process. As such, the art relied upon by the Examiner does not support a conclusion of obviousness, and these claim rejections should also be reversed.

IV. CONCLUSION

In view of the foregoing arguments distinguishing claims 1 and 3-5 over the art of record, Applicants respectfully submit that the claims are in condition for allowance, and respectfully request that the rejection of these claims be reversed.

Respectfully submitted,



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